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(56) Documents Cited  
GB 2236607 A GB 2229842 A GB 2029617 A  
WO 92/10820 A1 WO 88/09025 A1 US 4611200 A  
US 4540980 A US 4419658 A

(58) Field of Search  
UK CL (Edition L ) G4N NAA NHA

(54) Portable smoke detector

(57) Detector comprises a ventilated case 1, power source, the means 2 for the detection of smoke with audible and light signalling devices, 3, 4, an escape lamp 6 which are activated upon the detection of smoke or may be operated manually, a test switch 5 to confirm correct operation of the detector, a programmable digital-alarm clock 8 with audible clock alarm device and an unfolding support or pivoting hook or other means enabling the Portable Smoke Detector to be suspended from or affixed to a suitable point, an interconnect facility 9 enabling the Portable Smoke Detector to be linked to other detectors or to a central communication and control system or other devices and a low battery warning signalling indication.

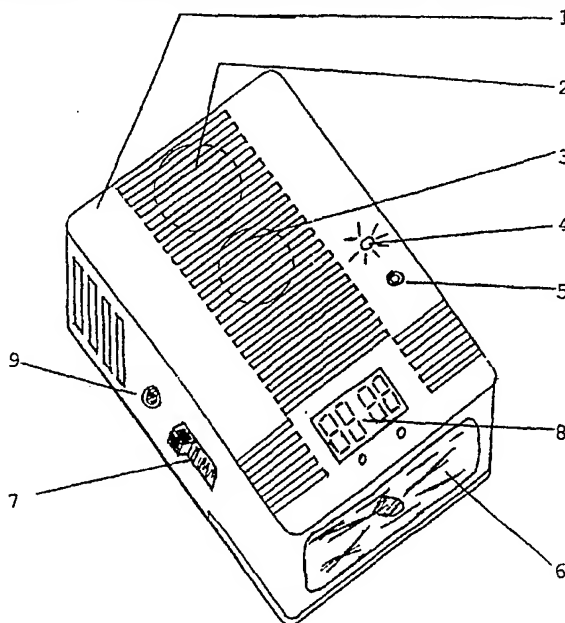


Figure 1

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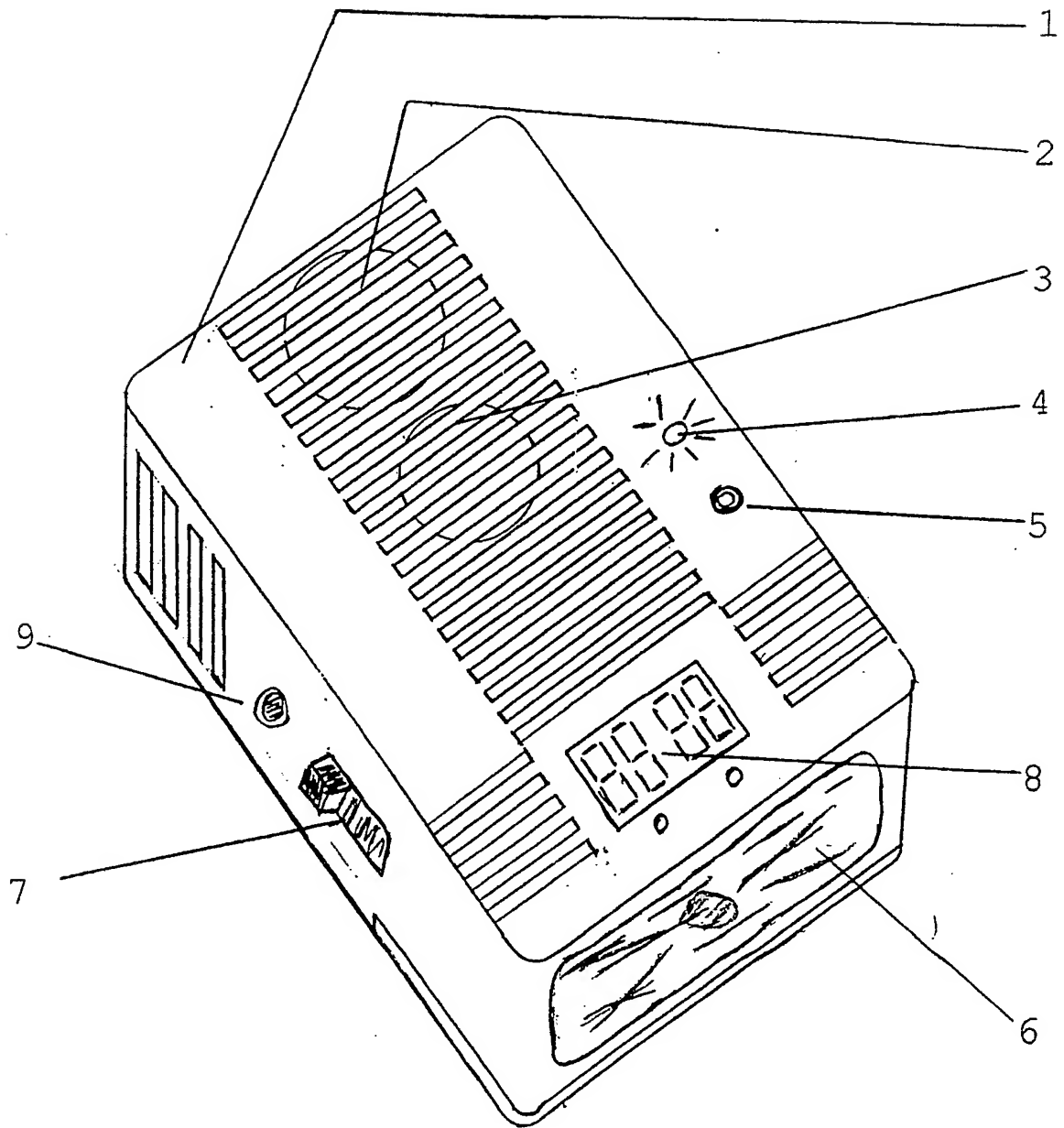


Figure 1

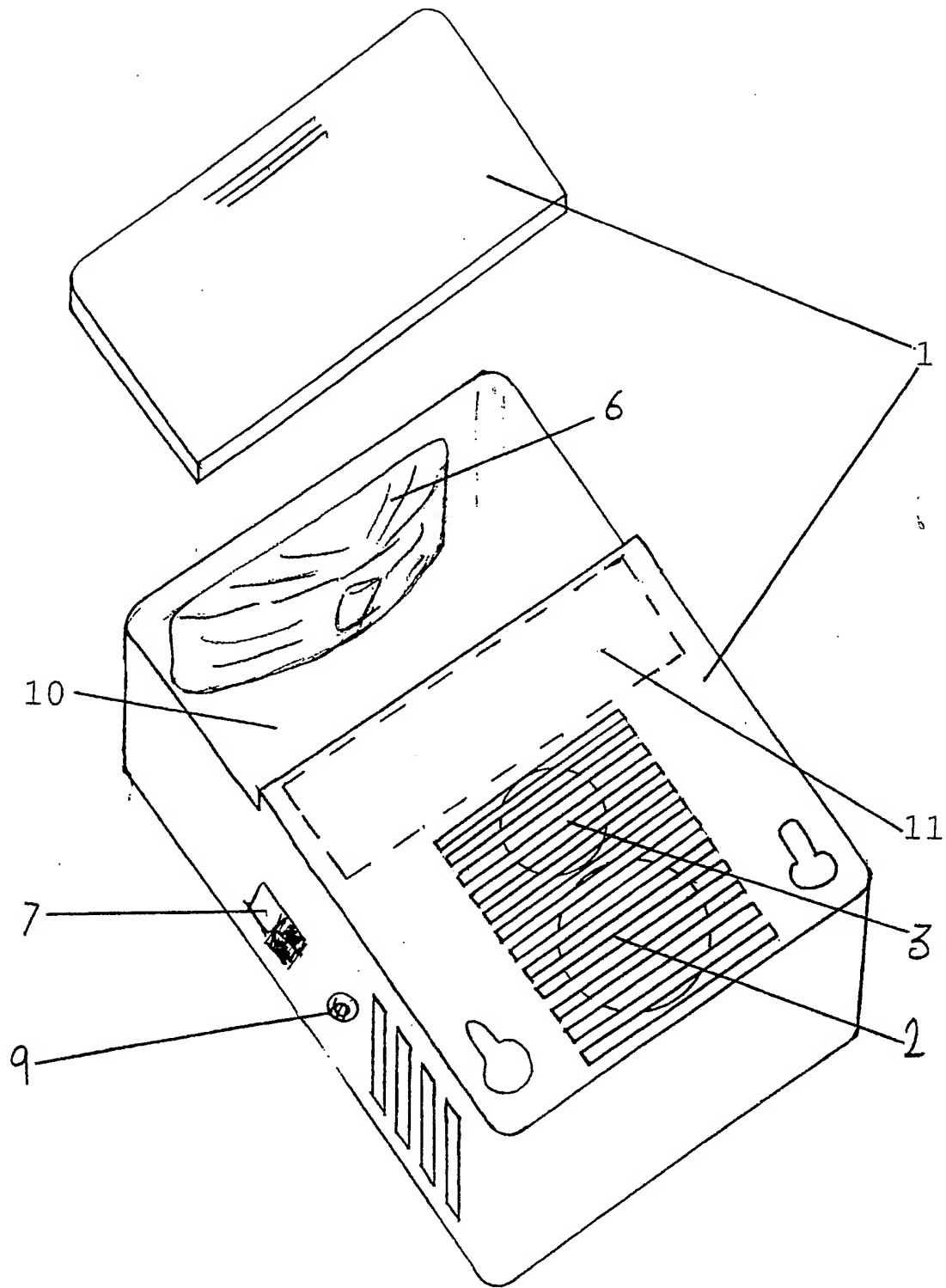


Figure 2

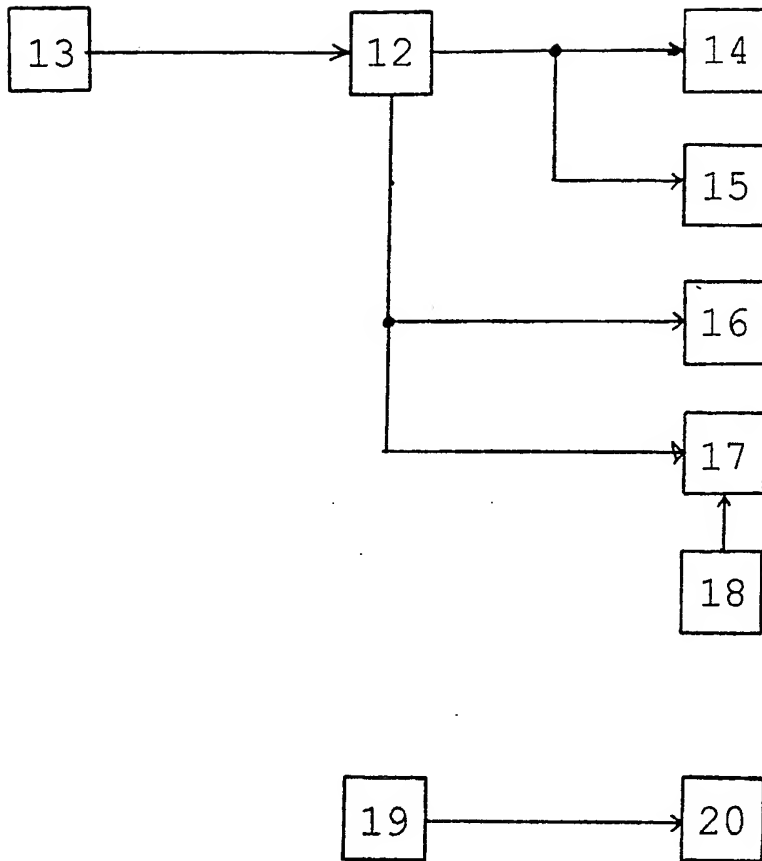


Figure 3

### Portable Smoke Detector

This invention relates to a portable smoke detector.

Smoke detectors are well known devices, available for use in commercial, industrial and domestic applications.

Commercial and industrial smoke detectors operate as point or volumetric or ventilation duct mounted units. These are powered by the mains or by direct wire from a central DC source or by battery and comprise a photoelectric or ionisation chamber or other detector, an electronic circuit and light & audible signalling devices. Detection warning may be activated both locally (at the detector) or forwarded to a central communication and control system or both (and sometimes other detectors) by direct wire or radio telemetry or other means. Some feature battery backup so that detection is still possible in the event of mains supply failure.

The central communication and control system may, in the event of detection activate other operations, for example switch on emergency lighting or activate personnel evacuation signalling devices or activate fire fighting equipment or alert the emergency services or other actions.

Commercial and industrial smoke detectors are permanent installations and are not portable.

Domestic smoke detectors are installed in separate rooms at ceiling height and operate independently of any central communication and control system, although some feature an interconnect facility to activate all interconnected detectors if any one detector activates. They are usually battery powered (typically by a PP3 or equivalent) and typically comprise a photoelectric or ionisation chamber or other detector, an electronic circuit and local light or audible or other signalling devices.

Domestic smoke detectors are permanent installations and are not portable.

Smoke detectors as described above are unsuitable for use where portable smoke detection is required, such as temporary cover in commercial and industrial applications where an individual detector has failed or been disabled and localised smoke detection cover is essential, for recreational cover (such as caravans, tents, boats), or by the traveller staying in accommodation where smoke detection is not provided by the hostelling establishment.

According to the present invention there is provided a Portable Smoke Detector comprising: a ventilated case, power source, for example mains or battery or mains with battery backup source or other means, the means for the detection of smoke with audible or light or audible and light or other signalling devices, an escape lamp which is activated upon the detection of smoke, the escape lamp being of sufficient intensity and duration for escape purposes, the escape lamp may be operated manually to operate as a conventional lamp, a test switch to confirm correct operation of the detector, a programmable digital alarm clock to continually display the time with audible clock alarm device activation at a pre-programmed time, an unfolding support or pivoting hook or other means enabling the Portable Smoke Detector to be suspended from or affixed to a suitable point, an interconnect facility enabling the Portable Smoke Detector to be linked to other detectors or to a central communication and control system or other device. Where the Portable Smoke Detector is battery powered the signalling devices operate intermittently during low battery condition to warn the user to replace an exhausted battery.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 shows in perspective, the Portable Smoke Detector ventilated case containing the power source (not shown), means for detecting smoke (not shown), audible and light signalling devices, escape lamp with manual lamp switch, test switch, programmable digital alarm clock with audible clock alarm device (not shown), pivoting hook and interconnect socket.

Figure 2 illustrates separation of the casing components for battery replacement.

Figure 3 shows a conceptual block diagram of the Portable Smoke Detector.

Referring to the drawings, the Portable Smoke Detector comprises a ventilated casing 1, for example by slots or holes in the casing or other means, with smoke detector 2, audible signalling device 3, light signalling device 4, test switch 5, escape lamp 6, manual lamp switch 7, programmable digital alarm clock 8 with audible clock alarm device (not shown), pivoting hook (not shown) and interconnect socket 9.

The casing can be separated into two or more parts by releasing the mechanism securing the parts, for example screws, lipped joints, catches or other means (not shown), to allow access to the battery compartment 10 for battery fitment or replacement.

Referring to Figure 2 the smoke detector 2, electronic circuit 11, audible signalling device 3, programmable digital alarm clock (not shown) and audible clock alarm device (not shown) are contained within the casing.

Referring to the conceptual block diagram in Figure 3, the electronic circuit 12 continually monitors the smoke detector 13, under no smoke conditions the audible 14 and light signalling devices 15 are inactive, when the smoke particle density in the air passing the smoke detector 13, increases the parameters of the detector change, this causes the electronic circuit 12 to activate the audible and light signalling devices 14 & 15 giving a smoke alarm, the interconnect facility 16 is activated allowing other detectors or other devices to be operated and the smoke detection to be forwarded to a central communication and control system or for other purposes, the escape lamp 17 is switched on providing suitable illumination to aid escape.

The test switch 18 when operated simulates the smoke present condition and triggers the electronic circuit to activate the audible 14 and light signalling devices 15, the interconnect facility 16 and the escape lamp 17.

The programmable digital alarm clock 19 and audible clock alarm device 20 provide the means for displaying the time and setting the clock to operate the audible clock alarm at a pre programmed time.

### Claims

1. A Portable Smoke Detector comprising a ventilated case, power source, the means for the detection of smoke with audible or light or audible and light or other signalling devices.
2. A Portable Smoke Detector according to Claim 1 with an escape lamp which is activated upon the detection of smoke.
3. A Portable Smoke Detector according to Claim 1 or Claim 2 where the escape lamp may be operated manually to operate as a conventional lamp.
4. A Portable Smoke Detector according to any one of Claims 1 to 3 with a test switch to confirm correct operation of the detector.
5. A Portable Smoke Detector according to any one of Claims 1 to 4 with a programmable digital alarm clock to continually display the time.
6. A Portable Smoke Detector according to any one of Claims 1 to 5 with a programmable digital alarm clock to continuously display the time with audible clock alarm device activation at a pre-programmed time.
7. A Portable Smoke Detector according to any one of Claims 1 to 6 with an unfolding support or pivoting hook or other means enabling the Portable Smoke Detector to be suspended from or affixed to a suitable point.
8. A Portable Smoke Detector according to any one of Claims 1 to 7 with an interconnect facility enabling the Portable Smoke Detector to be linked to other detectors or to a central communication and control system or other devices.
9. A Portable Smoke Alarm substantially as described herein with reference to Figure 1 to 3 of the accompanying drawings.

**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number

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**Relevant Technical fields**

(i) UK CI (Edition )  
L G4N (NAA, NHA)

(ii) Int CI (Edition )

**Search Examiner**

D SUMMERHAYES

**Databases (see over)**

(i) UK Patent Office

(ii)

**Date of Search**

16 SEPTEMBER 1993

Documents considered relevant following a search in respect of claims

1-9

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2236607 A (MBUTHIA)	1-7
X	GB 2229842 A (NESBIT)	1, 2, 3, 8
X	GB 2029617 A (GEBRUDER)	1, 5, 6
X	WO 92/10820 A1 (SOMBORG)	1, 5-8
X	WO 88/09025 A1 (RYDGREN)	1-4, 7, 8
X	US 4611200 (STILWELL)	1-7
X	US 4419658 (JAROSZ)	1, 2-4, 7
X	US 4540980 (PORCO)	1, 5-7

SF2(p)

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Category	Identity of document and relevant passages - 5 -	Relevance to claim(s)

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